

DENOMINAL VERBS AND CREATIVITY IN CHILD ROMANIAN

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Abstract: The current paper looks at the meaning of denominal verbs, i.e. verbs derived from nominal roots, through an experiment testing how Romanian children (Mean age: 4, Age range: 3-5) and adults understand nonce (non-existent) denominal verbs created from existing nouns such as *a cireși* ‘to cherry’ or *a vulpi* ‘to fox’. We show that children tend to be more “literal” in their interpretation, understanding such novel denominal verbs as actions/processes involving the actual entity denoted by the nominal root. In contrast, adults prefer ‘figurative’ interpretations in certain contexts, for instance, when the nominal root refers to an animal (*a vulpi* ‘to behave like a fox’). The results can be explained either cognitively, through children’s preference for literal interpretations at this stage in language acquisition, or structurally, through a preference for a structure which is simpler from a lexico-syntactic point of view, combining mostly action “light” verbs (rather than a whole range of light verbs) with nouns (rather than roots or OBJECT like N entities). In addition, we notice that both children and adults show an animacy bias, mostly producing sentences referring to animate entities, as well as an intransitivity bias, using intransitive verbs more than transitive ones.

Keywords: denominal verbs, L1 acquisition, Romanian, literal interpretation, figurative interpretation

1. Introduction

The aim of this paper¹ is to investigate the meaning of denominal verbs (i.e. verbs derived from nouns/nominal roots) through an experiment testing how Romanian children and adults understand novel (non-existent) denominal verbs created from existing nouns, such as *a cireși* ‘to cherry’ or *a vulpi* ‘to fox’. More specifically, following Kelly (1998), we assume that denominal verbs lend themselves to two kinds of interpretations: literal interpretations, expressing actions/processes involving the actual entity denoted by the nominal root, such as ‘to eat cherries’ for *a cireși* ‘to cherry’ or ‘to catch foxes’ for *a vulpi* ‘to fox’, and figurative interpretations, such as ‘to become (red) like a cherry, i.e. to blush’ for *a cireși* ‘to cherry’ or ‘to behave like a fox, i.e. to steal, to lie’ for *a vulpi* ‘to fox’. We investigate whether children and adults interpret novel denominal verbs in a similar way (literally), or whether they have different interpretive preferences. Previewing the results, we show that children are more literal than adults in their interpretations. This finding can shed light upon the kinds of structures initially preferred by children during first language acquisition, namely, structures involving lexical nouns rather than nominal roots and ‘doing’ verbs rather than ‘become like/behave like N’ verbs.

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¹ This work is part of a research project entitled “Experimental Insights into Denominals and Creativity (XIDenCre)”, funded by UEFISCDI (PN-III-P1-1.1-PD-2019-0472) during the period 1 September 2020-28 February 2022. We would like to thank the children and educators from Dreamland Kindergarten in Bucharest, as well as the undergraduate students at the Faculty of Foreign Languages and Literatures, University of Bucharest, for taking part in the elicitation tasks. In addition, we would like to express our gratitude to Alina Tigău (the project mentor), Larisa Avram, Rodica Ivan, Tom Roeper, Heidi Harley and William Snyder for their helpful suggestions.

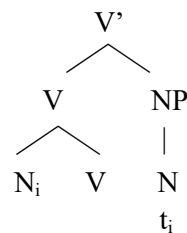
The roadmap for the paper is as follows: after presenting the aim of the paper, in section 2, we present some general background on denominal verbs. In section 3, we present the experiment testing the comprehension of semi-nonce denominal verbs by Romanian children and adults. In section 4, we discuss the experimental results, while in section 5, we draw the conclusions of our experimental research.

2. Background on denominal verbs

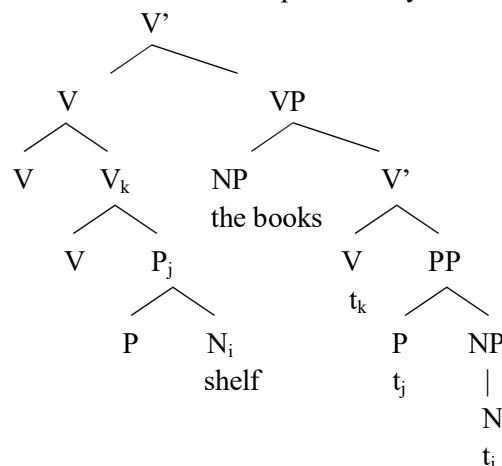
The meaning of denominal verbs, i.e. verbs derived from nominal roots, has been investigated in various frameworks (Lexical Syntax, Distributed Morphology, spanning, pragmatics) in an effort to capture the rule-based/ non-rule-based aspects of their semantics.

Morphological proposals argue that denominal verb meaning is rule-based. According to lexical syntax (Hale & Keyser 2002), the meaning of denominals can be captured by means of syntactic rules such as Incorporation/Conflation. The structure varies with the thematic role of the incorporated noun (theme – see 1a, location – see 1b, locatum, instrument, a.o).

- (1) a. Structure for *to dance* provided by Hale & Keyser (2002):

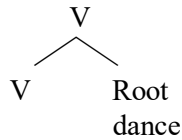


- b. Structure for *to shelve* provided by Hale & Keyser (2002):



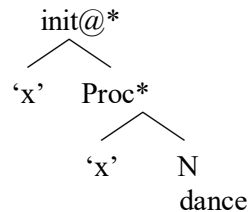
According to Distributed Morphology (Halle & Marantz 1993, Marantz 1997, Borer 2014, a.o), denominals are derived from an underspecified root:

- (2) Structure for denominals according to Distributed Morphology



According to Spanning (Brody 2000, Ramchand 2014, Svenonius 2012, 2016, Bleotu 2016, 2019), denominal verbs represent a span, a word which spells out multiple heads (e.g. *to dance* spells out initiation Phrase, process Phrase, nominal Root):

- (3) Structure for denominals according to Spanning (Bleotu 2016, 2019)



Linearized as x [N Proc Init]

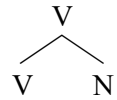
In contrast, the pragmatic account argues that syntax cannot capture the internal structure of denominal verbs. According to Kiparsky (1997), a mixed account is more appropriate: syntactic rules need to be enriched with a pragmatic principle governing the naming of actions, the Canonical Use Principle (Kiparsky 1997):

- (4) If an action is named after a thing, it involves a canonical use of that thing.

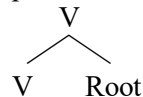
To tape, for instance, cannot mean to throw tape at someone, as this is not a canonical use of *tape*, but rather to cover something with tape. Interestingly, according to Kiparsky (1997), many verbs involve a canonical use of the thing, and, in fact, they cannot be combined with any other object: the verb *to tape*, for example, cannot combine with *pushpins* (**to tape with pushpins*). Such verbs are referred to by Kiparsky (1997) as *true denominal verbs*. In contrast, some verbs do not involve an actual use of the object at stake, but rather an activity that is similar to the activity usually performed with that object. These verbs are referred to by Kiparsky (1997) as “pseudo denominal verbs”. Such a verb is *hammer*: one could very well hammer with a shoe rather than an actual hammer (*to hammer with a shoe*). Kiparsky (1997) proposes that true denominal verbs are derived by combining *v* with nouns, whereas pseudo denominal verbs are derived by combining *v* with roots. In his view, thus, a structural account sensitive to the complement of *v*, together with the Canonical Use Principle, can account for the distinction between true and pseudo denominals:

(5) Structure for true and pseudo denominals according to Kiparsky (1997)

a. true denominals

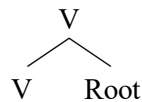


b. pseudo denominals

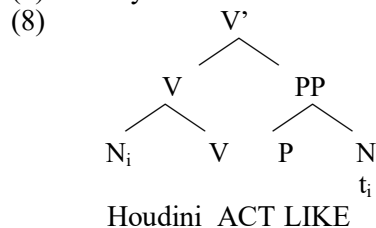


However, the structural distinction between true and pseudo denominal verbs has been argued against by Harley & Haugen (2007), who proposed instead that the distinction is purely pragmatic, and the reason why one cannot tape with pushpins is simply because pushpins are not similar enough to tape. However, given the similarity between bandaids and tape (in terms of adhesive properties), taping with bandaids is perfectly possible. Their proposal is supported by Bleotu & Bloem (2020, 2021), who ran several experiments where they tested English native speakers' intuitions about sentences where true/pseudo denominals combined with prepositional phrases of various degrees of similarity. Their results suggest that sentence acceptability is a function of the similarity between various PP-objects and the incorporated nominal root, and, consequently, that both true and pseudo denominal verbs are derived from (nominal) roots:

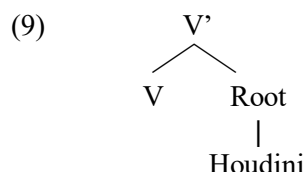
(6) Structure for true and pseudo denominals according to Harley & Haugen (2007), Bleotu & Bloem (2020, 2021)



Importantly, the literature has mostly focused on existent denominal verbs, whose meaning can be captured by recourse to syntactic rules or structure up to a certain extent. Hale & Keyser (2002) propose different lexico-syntactic structures in order to account for various types of existent denominal verbs, incorporating a multitude of thematic/semantic roles). More creative uses of verbs, however, are more problematic for lexical syntax, as it is not clear what kind of structure they should be assigned. For instance, if we consider the verb *Houdini'd* in a sentence such as (7), one type of interpretation we could give it would be 'to behave like Houdini', and, consequently, we might be tempted to represent such a verb accordingly in a lexico-syntactic framework (see 8).

(7) My sister **Houdini'd** her way out of the locked closet. (Clark & Clark 1979)

However, another way one could represent such a meaning would be by simply merging the light verb with a nominal root (which is N-like):



Thus, looking at verbs which allow for a wider, more creative array of meanings poses interesting challenges for the structural representation of meaning.

Interestingly, the distinction between rule-derived denominals and creative denominals has been investigated experimentally by Kelly (1998), who tested English speakers for the production, comprehension and paraphrasing of both kinds of denominals (see Table 1 and Table 2 for examples). The experimental results show that rule-derived verbs are easier to produce, comprehend and paraphrase than metaphorical ones. Consequently, one could opt for a mixed approach: rule-derived denominals are derived l-syntactically, creative denominals are derived pragmatically.

Table 1. Rule-derived denominal categories used in the experiments along with general definitions of verbs formed from each category

Category	Definition
Vehicles	to travel/convey by X
Musical Instruments	to play the X
Dances	to dance the X
Flavorings	to add X to food
Colors	to make smth have the color of X
Dwellings	to occupy or live in X

Table 2. Idiosyncratically derived denominal categories used in the experiments along with selected definitions

Category	Definition
Animals	to attempt to catch fish (“fish”); to act in a mischievous manner (“monkey”)
Body Parts	to bear without overt reaction (“stomach”); to look at (“eye”)
Building Parts	to surround with a wall (“wall”); to unite or make firm (“cement”)
Kitchen Utensils	to take up in a spoon (“spoon”); to cover with a lid (“lid”)
Tools	to strike blows (“hammer”); to fasten with a nail (“nail”)
Furniture	to install in office (“chair”); to remove from consideration (“table”)

Following Kelly (1998), Bleotu (2017) asked Romanian adults to provide a paraphrase and a sentence for 10 non-existent verbs derived from an existent noun and the corresponding verbs with the SE clitic:

- (10) *a cireși* ‘to cherry’, *a struguri* ‘to grape’, *a vulpi* ‘to fox’, *a renui* ‘to reindeer’, *a profesori* ‘to teacher’, *a marinări* ‘to sailor’, *a piei* ‘to skin’, *a furculi* ‘to fork’, *a șezlongui* ‘to sunbed’, *a microfoni* ‘to microphone’

- (11) *a se cireși* ‘to SE cherry’, *a se struguri* ‘to SE grape’, *a se vulpi* ‘to se fox’, *a renui* ‘to SE reindeer’, *a se profesori* ‘to SE teacher’, *a se marinări* ‘to SE sailor’, *a se piei* ‘to SE skin’, *a se furculi* ‘to SE fork’, *a se șezlongui* ‘to SE sunbed’, *a se microfoni* ‘to SE microphone’

Participants provided more ‘become like N’ and ‘behave like N’ interpretations for *se* clitic verbs than for verbs without clitics. To give just a few examples, *a cireși* ‘to cherry’ is mostly understood as ‘to pick cherries/to eat cherries/to put cherries on a cake’, whereas *a se cireși* ‘to SE cherry’ is understood as ‘to become like a cherry’ (‘to blush’, ‘to become red’) more than *a cireși* ‘to cherry’. Also, while *a vulpi* ‘to fox’ is understood in various ways, either literally as ‘to catch foxes’ or figuratively as ‘to behave like a fox’ (‘to steal’, ‘to spy’, ‘to lie’, a.o.), *a se vulpi* ‘to SE fox’ is almost entirely interpreted figuratively. Thus, it seems to be the case that speakers are sensitive to the presence of the clitic SE, preferring more (figurative) change-of-state interpretations than in the cliticless variant. Bleotu & Ivan (2021) further explored the role of *se* figure reflexives in interpreting novel verbs, showing on the basis of two experiments that *se* figure reflexives structures are more readily associated with non-agentive change-of-state interpretations.

While previous research has focused on how adults understand/produce denominal verbs, such verbs have never been investigated in language acquisition. However, a variety of studies have investigated children’s acquisition of light verb constructions, which may be quite relevant for the acquisition of denominal verbs. Thus, children have been shown to prefer using non-light verbs (e.g. “A kissed B”) over light verbs (e.g. “A gave B a kiss”) (Barner 2001, Oshima-Takane et al. 2001, He & Wittenberg 2020), and it has been proposed that the late production of light verbs (around the age of 4) is determined by the absence of a one-to-one syntax-semantics mapping (light verb constructions have more arguments than semantic roles) (He & Wittenberg 2020). Interestingly, while the actual verbs used in light verb constructions (*do*, *give*, *make*, *take*) appear early on (Goldberg 2013), the light variant of these verbs emerges later. Based on such investigations, we might thus expect children to have difficulties with denominal verbs, given that their meaning can be understood as a combination between various light verbs and nouns/nominal roots.

3. The comprehension of novel denominal verbs by Romanian children and adults

In order to see how Romanian children and adults understand denominal verbs, we tested them through an elicitation task, where participants had to provide paraphrases and sentences with novel denominals. We opted for a semi-artificial paradigm so as to avoid the problem of children giving answers based on encyclopedic knowledge rather than on lexico-syntactic knowledge about the formation of verbs from nouns/nominal roots.

3.1 Goal

The primary goal of the research is to determine whether Romanian children and adults differ in their preferences for literal or figurative interpretations of denominal

verbs, i.e. whether they understand a novel denominal verb as an action/process involving the actual entity denoted by the nominal root or rather as some action/process that is similar to the typical/canonical action/process involving the entity. In order to see whether there is any link between the animacy of the entity referred to by the nominal roots and the type of interpretation, we tested both denominals derived from animate entities, as well as non-animate entities. In addition to the primary goal, we are also interested in whether the sentences produced by children and adults differed in terms of syntactic frame (transitive/intransitive) or subject animacy (animate/inanimate).

3.2 Predictions

First and foremost, we predict that adults should prefer literal interpretations in case there are frequent situations involving direct contact between people/animals and the actual entity, but that they should prefer figurative interpretations otherwise. For instance, adults should interpret a verb like *a cireși* ‘to cherry’ as ‘to eat cherries’ more than as ‘to become like a cherry’, given that people interact with cherries a lot in daily life. However, adults should interpret a verb like *a vulpi* ‘to fox’ more like ‘to behave like a fox, i.e. to steal, to lie’ than like ‘to catch foxes’, given that people interact with foxes less than with dogs, for instance. Consequently, adults should provide more literal readings for animal class denominals than for the other classes. Given children’s difficulties with figurative thinking (Johnson & Pascual-Leone 1989, Gentner 1988, Nall 1983, a.o.), we expect children to generally provide more literal interpretations than adults, preferring literal interpretations even in contexts where adults prefer figurative interpretations.

Secondly, we predict that both adults and children will produce more sentences with denominals with animate subjects than with inanimate subjects, given a general bias towards talking about animate subjects (Bock & Warren 1985, Branigan and Feleki 1999, Dahl & Fraurud 1996, Givón 1983).

Thirdly, we also predict that both adults and children will produce more sentences with intransitive verbs than transitive verbs, given that intransitive denominals actually have an incorporated object, which makes them transitive below the word level.

3.3 Participants

19 Romanian children (Mean age: 4;09; Age range: 3-5) and 40 Romanian native adult speakers (recruited from undergraduate students at the University of Bucharest) took part in the elicitation task.

3.4 Materials

Participants were exposed to 16 possible, but nonexistent denominal verbs. The verbs belonged to four classes derived from nouns designating objects/places, plants/vegetables, animals, human roles (see Table 3).

Table 3. Non-existent verbs derived from existent nouns used in the experiment

Denominal class	Thematic role	Verbs
object class (non-animate objects & places)	Instrument, Location	<i>a chitări</i> ‘to guitar’, <i>a mașini</i> ‘to car’, <i>a râui</i> ‘to river’, <i>a strada</i> ‘to street’
plant class (fruits, vegetables)	Theme/Locatum	<i>a cireși</i> ‘to cherry’, <i>a lămâi</i> ‘to lemon’, <i>a cepui</i> ‘to onion’, <i>a dovleci</i> ‘to pumpkin’
animal class	Theme/Manner/Result	<i>a vulpi</i> ‘to fox’, <i>a pinguini</i> ‘to penguin’, <i>a elefanți</i> ‘to elephant’, <i>a iepuri</i> ‘to bunny’
human class	Theme/Manner/Result	<i>a dentisti</i> ‘to dentist’, <i>a mecanici</i> ‘to mechanic’, <i>a bunici</i> ‘to grandma’, <i>a mătuși</i> ‘to aunt’

3.5 Method

In the elicitation task, participants had to show the investigator how they would use various novel words and then explain what these words mean. Before proceeding, participants were given an example of what was expected of them on the basis of the word *a mătura* ‘to broom’. The investigator provided a sentence with this word and then explained the meaning of the word through a paraphrase (*a da cu mătura* ‘to use the broom’). Participants were then encouraged to do the same with the novel words they were presented with.

3.6 Results

3.6.1 Descriptive results

In terms of interpretation, the answers reflect typical actions/states/processes typical for the entity, in accordance with Kiparsky’s (1997) Canonical Use Principle (see Table 4 for examples of answers given by adults and Table 5 for examples of answers given by children). Participants provided two kinds of interpretations: literal interpretations, as revealed by paraphrases which show direct involvement with the actual entity denoted by the nominal root the novel verb is derived from, and figurative (‘like’) interpretations, as revealed by paraphrases where the subject exhibits some similarity in appearance/behaviour to the entity denoted by the nominal root.

Table 4. Sentence answers and paraphrases offered by adult participants per denominal classes and interpretations

Denominal class		Sentence answers	Paraphrases
object class	Lit.	<i>El chitărește frumos.</i> ‘He guitars beautifully.’	<i>a cânta la chitară</i> ‘to play the guitar’
	Fig.	<i>El a chitarit tot timpul.</i> ‘He guitared all the time.’	<i>a se preface că cântă la chitară</i> ‘to pretend to play the guitar’
plant class	Lit.	<i>Eu cireșesc în grădină.</i> ‘I am cherrying in the garden’.	<i>a culege cireșe</i> ‘to pick cherries’

	Fig.	<i>A cireșit la auzul spuselor lui.</i> 'She cherried at hearing his words.'	<i>a se îmbujora, a se face roșu</i> <i>ca cireașa</i> 'to become red in the cheeks, to become red like a cherry'
animal class	Lit.	<i>Vânătorul și soția sa au vulpit creatura care</i> <i>le măcelărise păsările din coteț.</i> 'The hunter and his wife foxed the creature that had butchered the birds from the coop.'	<i>a jupui o vulpe</i> 'to flay a fox'
	Fig.	<i>A vulpit-o cu niște vorbe frumoase.</i> 'He foxed her with some beautiful words.'	<i>a păcăli ca o vulpe</i> 'to prowl like a fox'
human class	Lit.	<i>El mecanicește și câștigă mult.</i> 'He mechanics and earns a lot of money.'	<i>a lucra ca mecanic</i> 'to work as a mechanic'
	Fig.	<i>Își mecanicește singur mașina când se strică.</i> 'He mechanics his own car when it breaks.'	<i>a repara ca un mecanic</i> 'to fix like a mechanic'

Table 5. Sentence answers and paraphrases offered by children
per denominal classes and interpretations

Denominal class		Sentence answers	Paraphrases
object class	Lit.	<i>Fata chitărește.</i> 'The girl is guitaring.'	<i>a cânta la chitară</i> 'to play the guitar'
	Fig.	<i>Tractorul chitărește.</i> 'The tractor is guitaring.'	<i>a face un sunet vum vum vum</i> 'to make a voom voom voom sound'
plant class	Lit.	<i>Eu cireșesc.</i> 'I am cherrying.'	<i>a mânca cireșe</i> 'to eat cherries'
	Fig.	Missing	
animal class	Lit.	<i>Lupul vulpește.</i> 'The wolf is foxing.'	<i>a prinde o vulpe</i> 'to catch a fox'
	Fig.	<i>Pisica vulpește.</i> 'The cat is foxing.'	<i>a pândi ca o vulpe</i> 'to trick like a fox'
human class	Lit.	<i>Un mecanic bun a mecanicit mașina.</i> 'A good mechanic mechanicked the car.'	<i>a repara mașini</i> 'to repair cars'
	Fig.	<i>Oamenii mecanicesc.</i> 'People mechanic.'	<i>a repara ca un mecanic</i> 'to fix like a mechanic'

While both children and adults provide both kinds of interpretation during the elicitation task, children seem to prefer literal interpretations to a much greater extent than adults (see Table 6). Children produce the greatest number of figurative readings ('become like...'/ 'behave like...') in the case of denominals belonging to the animal class (28.95%) and the human class (33.81%), still a much lower number than adults for the same classes (animal class = 96.97%, human class = 66.19%).

Table 6. Type of interpretation per denominal class

Denominals	Literal		Figurative	
	Adults	Children	Adults	Children
object class	72.67%	84.00%	27.33%	16.00%
plant class	65.67%	95.89%	34.33%	4.11%
animal class	3.03%	71.05%	96.97%	28.95%
human class	40.00%	66.19%	60.00%	33.81%

In terms of sentences produced by participants, both children and adults provided more sentences with animate subjects than with inanimate subjects (see Table 7).

Table 7. Animate subjects per denominal class

Denominals	Literal		Figurative	
	Adults	Children	Adults	Children
object class	91.92%	76.32%	8.08%	23.68%
plant class	96.39%	97.18%	3.61%	2.82%
animal class	98.18%	100.00%	1.82%	0.00%
human class	100.00%	97.33%	0.00%	2.67%

They also generally provided more sentences with intransitive uses of verbs than with transitive uses of verbs (see Table 8). Nevertheless, there are some differences between children and adults in terms of verb transitivity preferences. While adults preferred intransitive structures for the object class and the animal class, they seemed to use both transitive and intransitive structures for the plant class, and they preferred the intransitive structure for the human class. Instead, children preferred intransitive structures for every class of denominal verbs.

Table 8. Transitivity per denominal class

Denominals	Literal		Figurative	
	Adults	Children	Adults	Children
object class	23.60%	5.26%	76.40%	94.74%
plant class	41.56%	14.60%	58.43%	85.40%
animal class	23.60%	76.36%	76.36%	94.74%
human class	71.87%	27.95%	27.95%	91.55%

3.6.2 Statistical results

We analyzed the results using logit mixed-effects models in R-4.0.5 (2021). We computed a mixed effects model with Interpretation (literal/figurative) as a dependent variable (DV), Group, Nominal Root Animacy (the animacy of the nominal root the denominal is derived from), and their interaction as fixed effects, and with random slopes per Item and Participant. The results (see Table 9) show that children provide more literal interpretations than adults. In addition, both adults and children seem to provide more figurative (‘become/behave like...’) interpretations for the classes of denominals derived from animate nominal roots.

Table 9. Results of a glmer performed on the denominal data, with Interpretation as DV

Parameter	Estimate	Std. error	<i>z</i>	<i>p</i>
Intercept	-0.212	0.547	-0.389	0.697
Group	-3.457	0.496	-6.967	3.24e-12 ***
Root Animacy	-0.647	0.610	-1.062	0.288
Group: Root Animacy	1.746	0.583	2.994	0.00275 **

We also looked at the contexts where participants produced more sentences with animate subjects or with transitive verbs. In order to investigate subject animacy, we computed a logit mixed effects model with Subject animacy as a dependent variable, Group, Nominal Root Animacy, and their interaction as fixed effects, and with random

slopes per Item and Participant. The results reveal no group effect overall, no significant effect for Root Animacy, and no significant interaction between Group and Root Animacy. Both adults and children generally produce sentences with animate subjects regardless of the animacy of the nominal root.

Table 10: Results of a glmer with Subject Animacy as a DV

Parameter	Estimate	Std. error	<i>z</i>	<i>p</i>
Intercept	-1.644	0.347	-4.744	2.09e-06***
Group	2.446	0.338	7.230	4.84e***
Root Animacy	2.8	0.504	5.556	2.76e-08***
Group: Root animacy	-0.356	0.496	-0.718	0.473

In order to investigate the relation between type of interpretation and transitivity, we computed a logit mixed effects model with Transitivity as a dependent variable, Group, Root Animacy, and their interaction as fixed effects, and with random slopes per Item and Participant. The results reveal a significant group effect overall: children produce more intransitive verbs than adults. There is also a significant interaction between Group and Root Animacy, showing that adults tend to produce more transitive verbs than children for denominals derived from animate roots than from inanimate roots ($p < 0.01$).

Table 11. Results of a glmer with Transitivity as a DV

Parameters	Estimate	Std. error	<i>z</i>	<i>p</i>
Intercept	6.545	2.111	3.101	0.00193**
Group	-0.344	1.255	-0.274	0.784
Root Animacy	-2.769	2.201	-1.258	0.208
Group: Root Animacy	-0.753	1.378	-0.547	0.585

4. Discussion

4.1 Why do children provide more literal interpretations than adults?

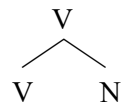
There are several accounts which could capture children's tendency to be more "literal" in their interpretation in comparison to adults.

On the one hand, such a tendency could be explained through a structural account. Such an account goes back to Kiparsky (1997), who distinguished between two types of denominals: true denominals (denominals with a literal interpretation), which involve the actual use of the object incorporated in the verb, such as *to tape*, and pseudo-denominals (denominals with a figurative interpretation), which do not involve the actual use of the object the denominal is derived from, such as *to hammer*. As already discussed, Kiparsky (1997) proposed that true denominals are derived by combining V with a noun, whereas pseudo denominals are derived by combining V with a root.

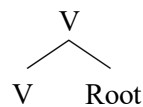
In our novel denominal verb paradigm, the same verb can have both literal and figurative interpretations. One possibility would be to argue that literal readings are

derived by composing a verbal element with a noun, whereas figurative readings are derived by composing a verbal element (either BECOME or ACT) with a root.

- (12) a. denominals with a literal interpretation



- b. denominals with a figurative interpretation



Within such an account, children's preference for literal interpretations would be motivated by their familiarity with the entities referred to by the nouns (N), as opposed to their lack of familiarity with roots and their meanings. Children get a lot of exposure to a great variety of nouns, and they are able to map nouns (even novel nouns) to objects/entities from early on (Echols & Marti 2004, Fennel 2006, Waxman & Booth 2001, a.o.). In contrast, roots never occur independently of the words they are part of, and getting to the meaning of roots might involve morphological backtracking operations that are too complex and abstract for children (*to dance-Ø* > *dance (N)* > *dance (Root)*). In addition, computing noun-like root meaning is semantically more challenging, involving identification of possible similarities of the root with various objects.

In addition to the merge with noun/ merge with root explanation, another possibility would be to argue that figurative readings are derived by composing a verbal element with OBJECT TYPE N, which would pick out all the objects bearing similarity to N (see Bleotu & Bloem 2020, 2021). Within such an account, figurative readings would be more complex both syntactically and semantically.

- (13) Denominals with a figurative interpretation



However, the first proposal seems more in tune with the rich body of existent linguistic literature on the conceptual and morphological reality of roots (see, for instance, Borer 2014). Interestingly, novel denominal verbs pose an extra challenge for acquisition in comparison to novel verbs which are not derived from nouns/ nominal roots. While, in the case of novel verbs, children simply have to map verbs to events, in the case of novel denominal verbs, children: (i) map the nouns to objects/entities, (ii) associate a "light" verb with the noun, and map the resulting verb to an event. Given children's familiarity with the existent nouns but not the novel denominal verbs derived from them, it thus makes sense that children should prefer interpretations which involve the actual objects (denoted by the noun) rather than roots or noun-like objects.

In addition, in terms of the verbs chosen to combine with nouns or roots/OBJECT TYPE N, children seem to have a preference for DO-ing verbs rather than BECOME/BEHAVE LIKE N, possibly because of the fact that actions are prototypical events, and, from an aspectual point of view, they are also simpler than changes of state.

On the other hand, children's preference for literal readings could be explained by a pragmatic/cognitive difficulty with figurative readings for children between the ages 3-5. Such an account is compatible with the idea that both denominals with literal interpretations and denominals with figurative interpretations are derived from the same structure (V and Root), as in Harley & Haugen (2007), Bleotu & Bloem (2020, 2021). The challenges for children would thus be pragmatic rather than structural. Children's difficulty with figurative meanings is well-documented. Billow (1975), for instance, showed that there is a significant developmental effect for handling similarity metaphor comprehension by children between the ages 7-13 as compared to children between the ages 5-6. Several explanations have been provided for children's difficulty with figurative meanings. Metaphorical thinking has been linked to Working Memory (Billow 1975), cognitive flexibility (Mashal & Kasirer 2011) and inhibitory control (Chiappe & Chiappe 2000, Recanatì 2004, Rubio-Fernández 2007). While cognitive flexibility is needed to select the common attributes of terms and to shift between literal and metaphoric meanings, inhibitory control is needed to suppress the literal meaning. In order to understand figurative similarity meanings, analogous elements need to be integrated into a new whole through a process of relational reasoning (Paivio 1979). Interestingly, children younger than 7 interpret figurative comparisons in terms of object similarity (perceptual similarity), while older children are able to do so in terms of non-perceptual similarity. There is thus a developmental path in metaphor comprehension (Johnson & Pascual-Leone 1989, Gentner 1988, Nall 1983): Children have to first identify the similarities between objects, understand the relations between these similarities and then integrate them in a new concept. Following this line of research, it could be that children are more "literal" because figurative readings are cognitively more costly and more difficult, involving multiple steps. Notably, children also have a more limited world knowledge than adults, and, in consequence, a more limited capacity to identify the similarities between objects.

4.1 Why do both children and adults produce more sentences with animate subjects than inanimate subjects?

The production of sentences with animate subjects can be explained through a well-observed animacy bias. Animate entities are more often chosen as the subject or topic of a sentence than inanimate ones (Givón 1983, Dahl & Fraurud 1996). They also occur earlier in the sentence (Branigan & Feleki 1999), in accordance with an Easy First principle (the entities easier to retrieve come first). Two possible explanations for the animacy bias have been provided in the literature: the preference to refer to animate entities over inanimate ones can be a consequence of lexical accessibility (Branigan et al., 2008), according to which lexical concepts denoting animate entities are preferred over lexical concepts denoting inanimate entities, or it can be a consequence of conceptual accessibility (Bock & Warren 1985, Arnold 2010), according to which non-linguistic

conceptual representations of animate entities are more easily retrieved from memory than of inanimate ones. Both accounts are compatible with our experimental results. Interestingly, while adults referred to a variety of animate subjects (*student, brother, mother-in-law* a.o), children's choices were more limited: children mostly referred to *I, you, he, mommy, daddy, granny* and some animals. These preferences can be explained (both) through children's more limited linguistic and world knowledge, as well the fact that certain people/animals are more salient in their universe.

4.2 Why more sentences with intransitives than sentences with transitives?

Another interesting finding is that both children and adults tended to prefer intransitive structures when they produced sentences with denominals. This is especially interesting considering that the acquisition literature on verb transitivity seems to suggest a transitivity bias, i.e. children tend to overgeneralize intransitives to transitive structures (e.g. *I disappeared it, You cried her!*) much more than they overgeneralize transitives to intransitives. Bowerman (1982) observed that transitive overgeneralizations of intransitives also tend to persist in the form of occasional errors even up to the age of 8 or 9, while intransitive overgeneralizations of intransitive verbs occur much less and do not persist. In fact, by age 4 to 5, intransitive overgeneralization errors are extremely rare. In a study conducted by Brooks et al. (1999), children (belonging to 3 age groups: age 3, age 4/5 and age 8) were exposed to several exclusively transitive/exclusively intransitive verbs and encouraged to overgeneralize their use in order to describe certain situations. The results show that children make more transitive overgeneralization errors than intransitive ones. A diary study conducted by Ambridge & Ambridge (2020) on their daughter, Chloe, shows that, by the age of 4, she often treats intransitive verbs as transitive, but very rarely does she make the opposite mistake of treating transitive verbs as intransitives.

- (14) Diary Data:
3;10 We died (dissolved) Mummy's special soap didn't we, Dad?

Previous literature (both experimental and longitudinal) thus seems to point towards a transitivity bias in verb production. Novel denominals, however, seem to be biased towards intransitive uses. This can be easily explained if we assume that participants treat the novel denominals as transitives which have incorporated their object:

- (15) to cherry = to eat a cherry
to fox = to catch a fox

The idea is supported in the literature by cognate object constructions (Hale & Keyser 2002), where the object becomes explicit:

- (16) dance a dance, dance a tango, dance a beautiful dance, dance a beautiful tango
smile a smile, smile a beautiful smile

If we assume that novel denominal verbs are actually covert transitives, then it is only natural that children and adults should prefer simpler structures, where the novel denominal verb takes no object apart from the already incorporated object. The intransitivity bias for novel denominal verbs can thus be explained by assuming awareness of incorporation and a general preference for syntactically simpler constructions. Interestingly, children are much more consistent in their intransitivity bias than adults, who prefer intransitives for denominals belonging to the animal class, the plant class, the object class but prefer transitive structures for denominals belonging to the human class. This could be explained through adults' association of human class denominals with activities where people act upon objects or engage with other people.

5. Conclusions

In conclusion, the paper has provided experimental evidence that Romanian children differ from Romanian adults, preferring more literal interpretations for novel denominal verbs than adults when producing paraphrases. This preference can be explained in structural terms, as a preference in the case of children for structures which merge (light) verbs with nouns rather than (n-like) roots. It could also be explained on cognitive grounds, because of children's general difficulty with figurative meanings at ages 3, 4 and 5. The elicitation task has also revealed that both children and adults prefer to produce sentences referring to animate subjects (especially relevant persons, like 'I', 'mommy', 'daddy' in the case of children). There is also a preference for using intransitive syntactic frames, suggesting that both children and adults are aware of the fact that denominal verb formation involves object incorporation and treat denominal verbs as transitives in disguise.

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